

Report of Results: MVA 6423

Arizona Building Dust  
Arizona Dept of Corrections  
Environmental Forensic Microscopy Analysis

Prepared for:

Compass Environmental Inc.  
1751 McCollum Parkway  
Kennesaw, GA 30144

Respectfully Submitted by:



James R. Millette, Ph.D.  
Executive Director

MVA Scientific Consultants  
3300 Breckinridge Boulevard  
Suite 400  
Duluth, GA 30096

10 January 2007



## Report of Results: MVA 6423

Arizona Building Dust – Arizona Dept of Corrections  
Environmental Forensic Microscopy Analysis

## INTRODUCTION

This report contains the results of analytical work performed on dust from microvac samples received at MVA Scientific Consultants' laboratory on 23 August 2005 via Federal Express. As shown in Table 1 below, the samples that are the subject of this report were the residual dusts retained on the microvac sampler nozzles collected from horizontal surfaces of the Arizona Dept of Corrections after the rest of the sample was prepared following the ASTM D5755 method. It was requested that MVA Scientific Consultants perform an environmental forensic microscopy examination of dust retained on the microvac sampler nozzles. The analyses were done during the period of 11 December 2006 through 10 January 2007.

Table 1. Sample Information

| Compass Sample # | MVA ID# | Description  |
|------------------|---------|--|
| Dust 05          | Q1422   | AZ Dept. of Corrections, 4th floor rm. 4309, light fixture     |
| Dust 06          | Q1423   | AZ Dept. of Corrections, 3rd floor rm. 3406, light fixture     |
| Dust 07          | Q1424   | AZ Dept. of Corrections, 3rd floor rm. 3111, light fixture     |
| Dust 08          | Q1425   | AZ Dept. of Corrections, 2nd floor rm. 2401, light fixture     |
| Dust 09          | Q1426   | AZ Dept. of Corrections, 2nd floor rm. 2304, light fixture     |
| Dust 10          | Q1427   | AZ Dept. of Corrections, 1st floor rm. 1305, new light fixture |

## ANALYTICAL METHODS

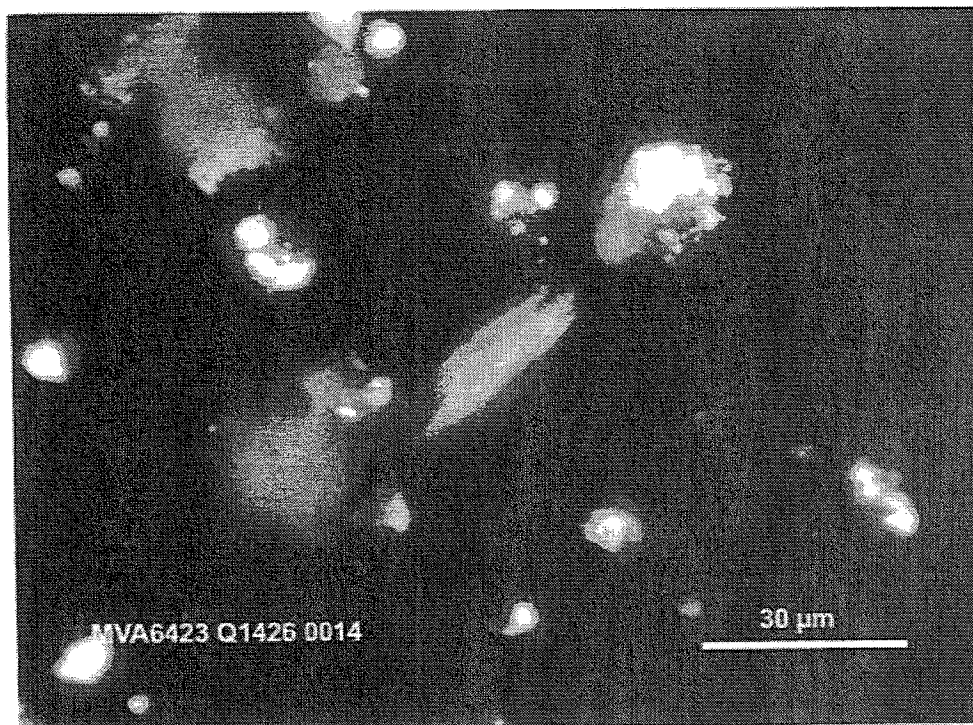
The samples were first examined by stereomicroscopy using a magnification range from 6.5X to 40X. Analysis was then performed by polarized light microscopy including microchemical tests utilizing an Olympus BH-2 polarized light microscope having a magnification range from 40X to 1000X.

## RESULTS AND DISCUSSION

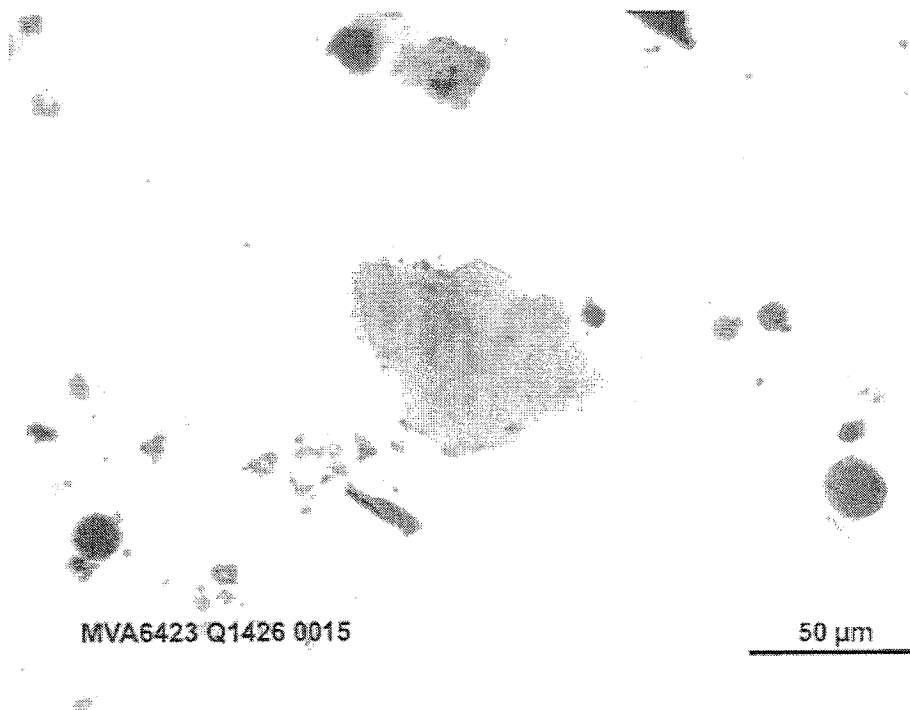
The dusts in Samples Q1422 through Q1427 have the same general appearance. They are all fine brown granular dusts. They contain vermiculite, gypsum and chrysotile asbestos (Figures 1 through 3). The particles in the dusts are consistent with normal indoor building dusts<sup>1,2</sup> (including cotton and other fibers) mixed with fallout from the fireproofing (containing vermiculite, gypsum and chrysotile) that is located in the building.

## REFERENCES

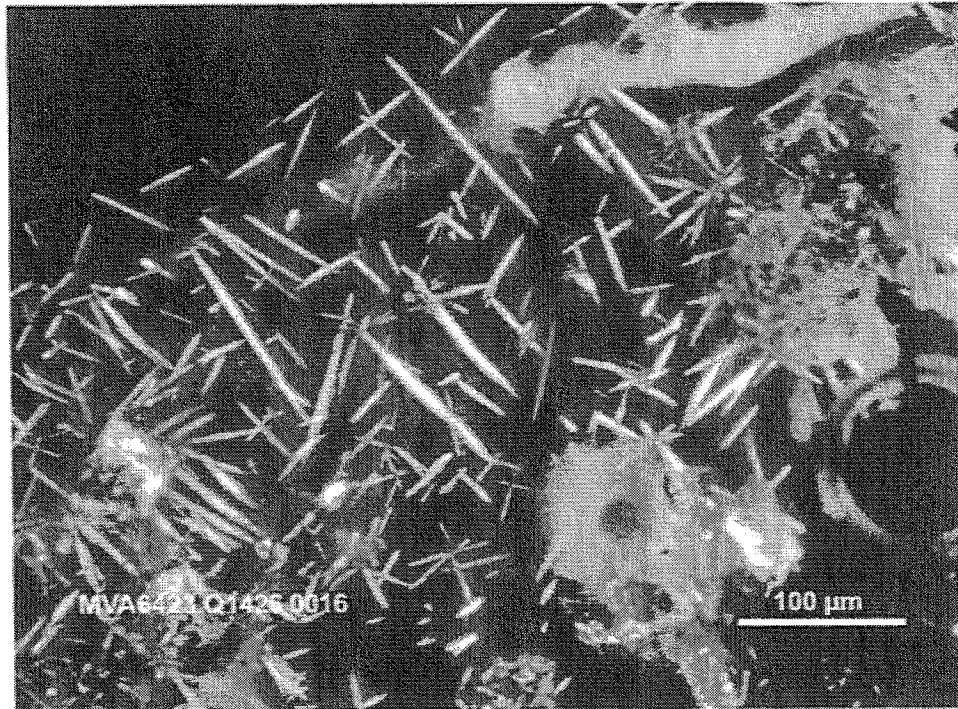
1. Millette, J.R., Lioy, P.J., Wietfeldt, J., Hopen, T.J., Gipp, M., Padden, T., Singsank, C., and Lepow, J., "A Microscopical Study of the General Composition of Household Dirt", *Microscope*, 51(4): 201-207, 2003.
2. Hopen, T. J. and Millette, J. R., "Microscopical Characterization of IAQ Dust Particles", in *Proceedings of Engineering Solutions to Indoor Air Quality Problems*, VIP.51, Air & Waste Management Association, pp. 437-444, 1995.



**Figure 1.** Polarized light microscope image (darkfield mode) of a chrysotile bundle in Sample Q1426.



**Figure 2.** Polarized light microscope image (brightfield mode) of a vermiculite flake in Sample Q1426. Aggregates of gypsum are also evident.



**Figure 3.** Polarized light microscope image (darkfield mode) of gypsum crystals in Sample Q1426.

## SEND RESULTS TO:

Compass Environmental, Inc.  
1751 McCollum Parkway  
Kennesaw, GA 30144  
Phone (770) 499-5127  
Fax (770) 423-7402

PROJECT NAME:  
PROJECT NO.:

ARIZONA BUILDINGS  
3025

## CHAIN OF CUSTODY

| SAMPLE NUMBER | SAMPLE NUMBER | SAMPLE NUMBER | SAMPLE NUMBER | SAMPLE NUMBER |
|---------------|---------------|---------------|---------------|---------------|
| DUST-01       | DUST-06       | DUST-11       | DUST-16       | DUST-21       |
| DUST-02       | DUST-07       | DUST-12       | DUST-17       | DUST-22       |
| DUST-03       | DUST-08       | DUST-13       | DUST-20       | DUST-23       |
| DUST-04       | DUST-09       | DUST-14       | DUST-21       | DUST-24       |
| DUST-05       | DUST-10       | DUST-15       | DUST-22       | DUST-25       |

NAME OF ANALYTICAL LABORATORY: MVA

| ACTION TAKEN ON SAMPLES | SIGNATURE               | PRINT NAME       | TITLE              | DATE/TIME RECEIVED | DATE/TIME TRANSFERRED |
|-------------------------|-------------------------|------------------|--------------------|--------------------|-----------------------|
| Collected               | <i>William M. Sving</i> | William M. Sving | Technical Director | 8/28/05            | 8/22/05               |
| Rec'd                   | <i>James R. Daulton</i> | James R. Daulton | Executive Director | 8/22/05            |                       |
|                         |                         |                  |                    |                    |                       |
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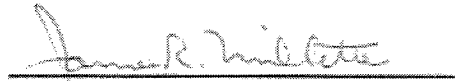
Report of Results: MVA 6423

Arizona Building Dust  
General Services Building  
Environmental Forensic Microscopy Analysis

Prepared for:

Compass Environmental Inc.  
1751 McCollum Parkway  
Kennesaw, GA 30144

Respectfully Submitted by:



James R. Millette, Ph.D.  
Executive Director

MVA Scientific Consultants  
3300 Breckinridge Boulevard  
Suite 400  
Duluth, GA 30096

10 January 2007



**Report of Results: MVA 6423****Arizona Building Dust – General Services Building  
Environmental Forensic Microscopy Analysis****INTRODUCTION**

This report contains the results of analytical work performed on dust from microvac samples received at MVA Scientific Consultants' laboratory on 23 August 2005 via Federal Express. As shown in Table 1 below, the sample that is the subject of this report was the residual dust retained on the microvac sampler nozzle collected from a horizontal surface of the General Services Building after the rest of the sample was prepared following the ASTM D5755 method. It was requested that MVA Scientific Consultants perform an environmental forensic microscopy examination of dust retained on the microvac sampler nozzle. The analyses were done during the period of 21 December 2006 through 10 January 2007.

**Table 1. Sample Information**

| Compass<br>Sample # | MVA ID# | Description   |
|---------------------|---------|---|
| Dust 50             | Q1458   | Blank   |
| Dust 53             | Q1461   | General Services Bldg, NE rm., top of pendant light fixture, west |

**ANALYTICAL METHODS**

The samples were first examined by stereomicroscopy using a magnification range from 6.5X to 40X. Analysis was then performed by polarized light microscopy including microchemical tests utilizing an Olympus BH-2 polarized light microscope having a magnification range from 40X to 1000X.

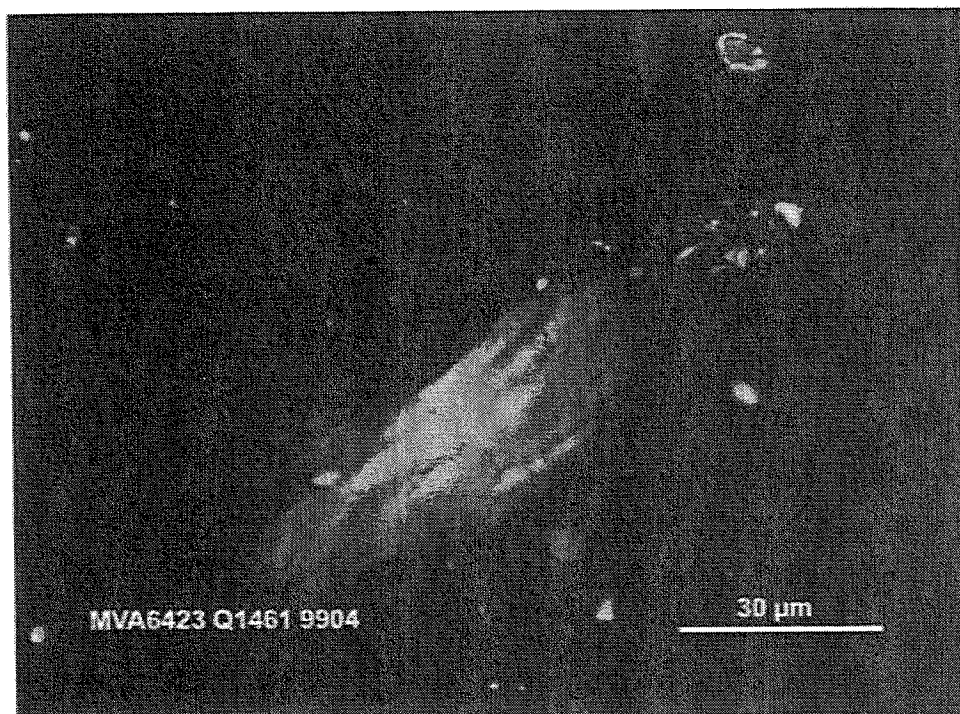
**RESULTS AND DISCUSSION**

The dust in Sample Q1461 is a fine brown granular dust with evident fibers. It contains vermiculite, montmorillonite and chrysotile asbestos (Figures 1 through 3). The particles in the dusts are consistent with normal indoor building dusts<sup>1,2</sup> (including cotton and other fibers) mixed with fallout from the acoustical plaster (containing vermiculite, montmorillonite clay and chrysotile) that is located in the building.

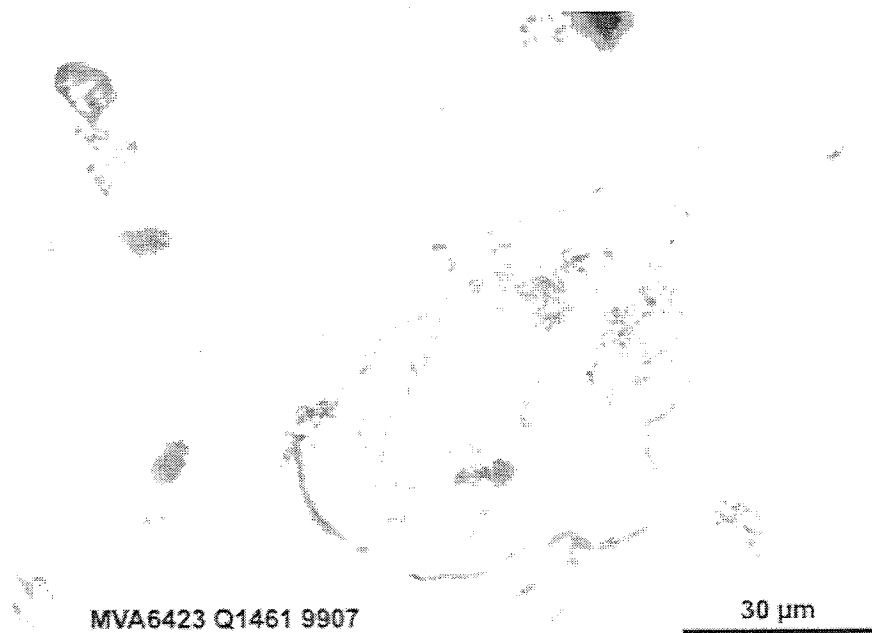


## REFERENCES

1. Millette, J.R., Lloy, P.J., Wietfeldt, J., Hopen, T.J., Glpp, M., Padden, T., Singsank, C., and Lepow, J., "A Microscopical Study of the General Composition of Household Dirt", *Microscope*, 51(4): 201-207, 2003.
2. Hopen, T. J. and Millette, J. R., "Microscopical Characterization of IAQ Dust Particles", in *Proceedings of Engineering Solutions to Indoor Air Quality Problems*, VIP.51, Air & Waste Management Association, pp. 437-444, 1995.



**Figure 1.** Polarized light microscope image (darkfield mode) of a chrysotile bundle among gypsum and vermiculite flakes in Sample Q1461.



**Figure 2.** Polarized light microscope image (brightfield mode) of a vermiculite flake in Sample Q1461.



Figure 3. Polarized light microscope image (brightfield mode) of montmorillonite clay in Sample Q1461.

## SEND RESULTS TO:

Compass Environmental, Inc.  
1751 McCollum Parkway  
Kennesaw, GA 30144  
Phone (770) 499-7127  
Fax (770) 423-7402

PROJECT NAME: Arizona Building  
PROJECT NO.: 2025

## CHAIN OF CUSTODY

| SAMPLE NUMBER | SAMPLE NUMBER | SAMPLE NUMBER | SAMPLE NUMBER | SAMPLE NUMBER |
|---------------|---------------|---------------|---------------|---------------|
| DUST-40       | DUST-45       | DUST-50       |               |               |
| DUST-41       | DUST-46       | DUST-51       |               |               |
| DUST-42       | DUST-47       | DUST-52       |               |               |
| DUST-43       | DUST-48       | DUST-53       |               |               |
| DUST-44       | DUST-49       |               |               |               |

NAME OF ANALYTICAL LABORATORY: MVA

| ACTION TAKEN ON SAMPLES | SIGNATURE              | PRINT NAME      | TITLE              | DATE/TIME RECEIVED | DATE/TIME TRANSFERRED |
|-------------------------|------------------------|-----------------|--------------------|--------------------|-----------------------|
| Collected               | <i>William M. King</i> | William M. King | Technical Director | 8/18/05            | 8/22/05 come          |
| Rec'd                   | <i>James R. King</i>   | James R. King   | Executive Director | 8/22/05            |                       |
|                         |                        |                 |                    |                    |                       |
|                         |                        |                 |                    |                    |                       |
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